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Reyes

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(54) **ISOLATED CURL MACHINE AND METHOD OF TRAINING THEREFOR**

(75) Inventor: **Gil Reyes**, Las Vegas, NV (US)

(73) Assignee: **GRAA INNOVATIONS, LLC**, Las Vegas, NV (US)

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(51) **Int. Cl.**

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A63B 21/062	(2006.01)
A63B 23/12	(2006.01)
A63B 21/02	(2006.01)
A63B 21/055	(2006.01)
A63B 21/00	(2006.01)
A63B 69/00	(2006.01)

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CPC ***A63B 23/1281*** (2013.01); *A63B 21/02* (2013.01); *A63B 21/023* (2013.01); *A63B 21/0552* (2013.01); ***A63B 21/062*** (2013.01); *A63B 21/1469* (2013.01); ***A63B 21/1484*** (2013.01); *A63B 69/0057* (2013.01); *A63B 2208/0233* (2013.01)

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USPC 482/92–94, 98–99, 131, 148, 100–103

See application file for complete search history.

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Primary Examiner — Loan H Thanh
Assistant Examiner — Megan Anderson
(74) *Attorney, Agent, or Firm* — One LLP

(57) **ABSTRACT**

An isolated curl machine and method therefor is disclosed herein. Generally, the isolated curl machine provides a resistance having a force which is directed upward and away from the user. The machine may also support the user's upper arms, or a portion thereof. In this manner, training on the machine is highly focused on the biceps. The machine may comprise a frame, a seat, an arm rest, and a resistance device. The user may engage the machine by sitting in the seat and placing his or her arms on the arm rest. In this position, the user may engage the resistance device such as by grasping a handle of the resistance device. The resistance device provides the resistance which resists movement of the user's arm during a bicep curl and may be configured such that the force of the provided resistance is directed upward and away from the user.

11 Claims, 4 Drawing Sheets

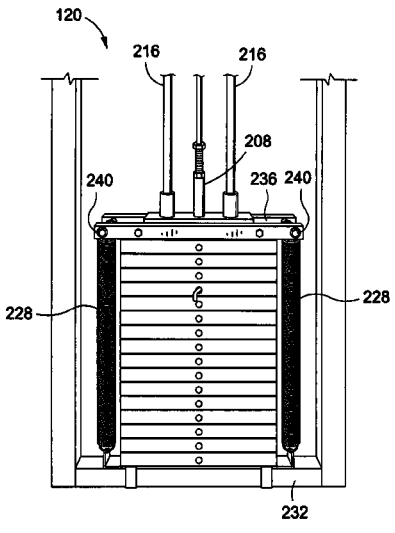

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FIG. 1

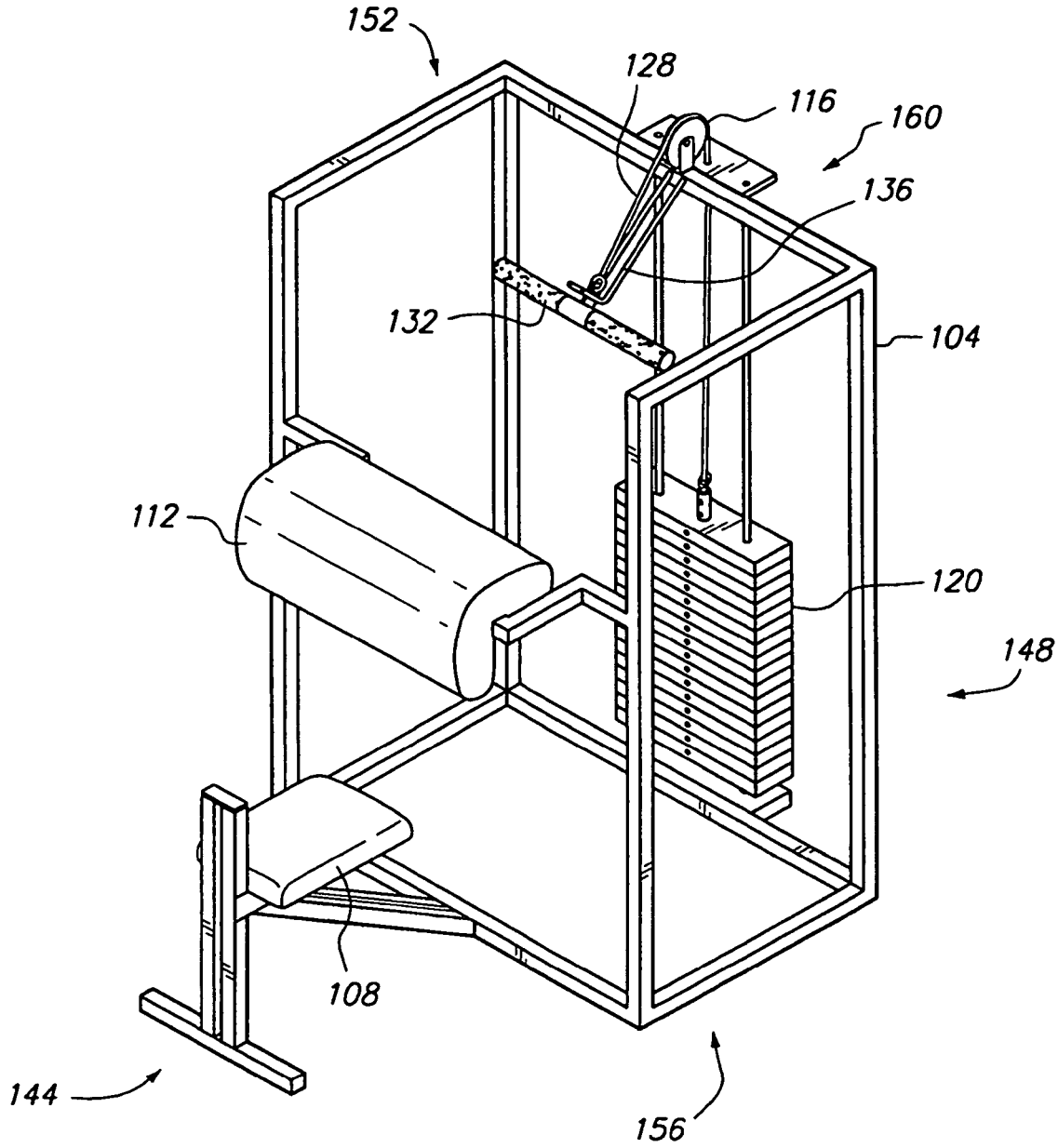


FIG. 2A

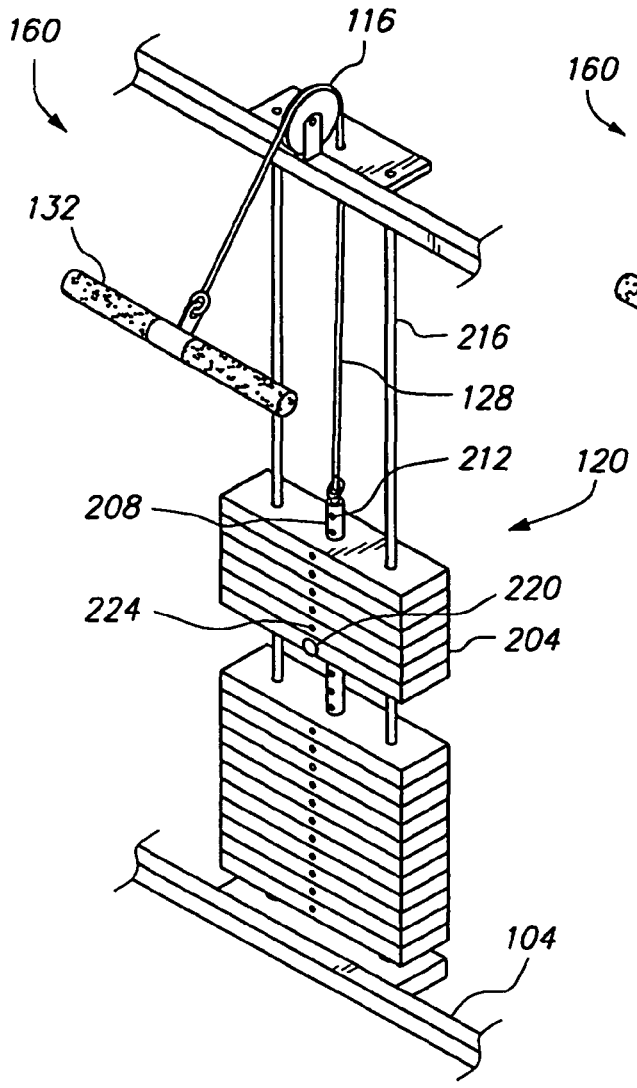
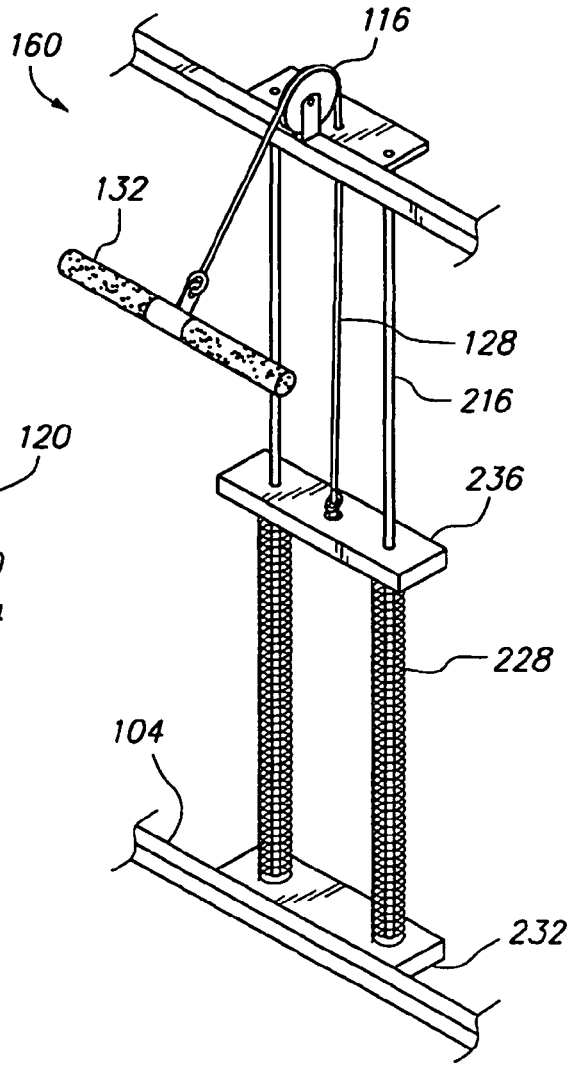

160
116
132
216
128
212
120
208
220
224
204
104

FIG. 2B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116
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236
228
104
232

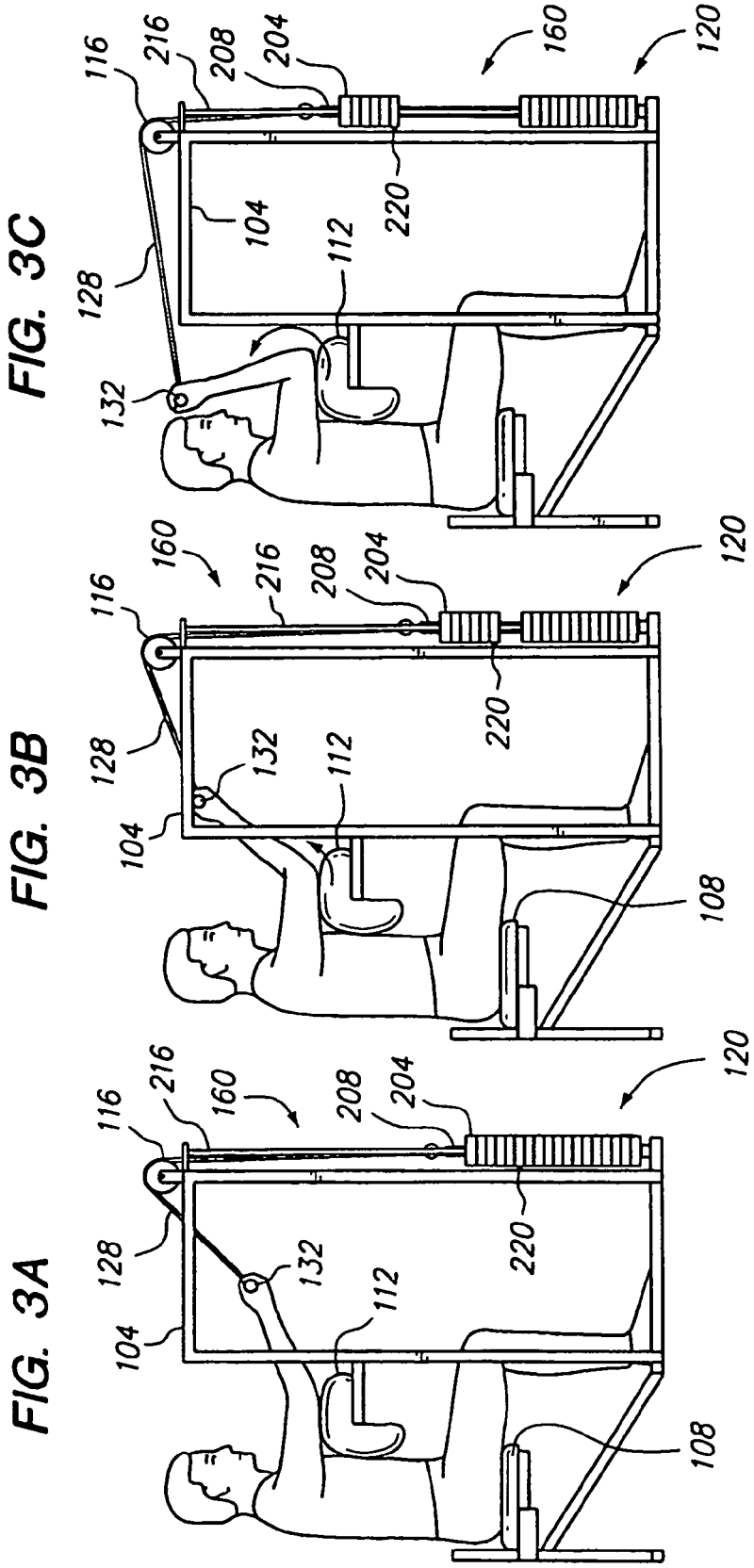

FIG. 3C

FIG. 3B

FIG. 3A

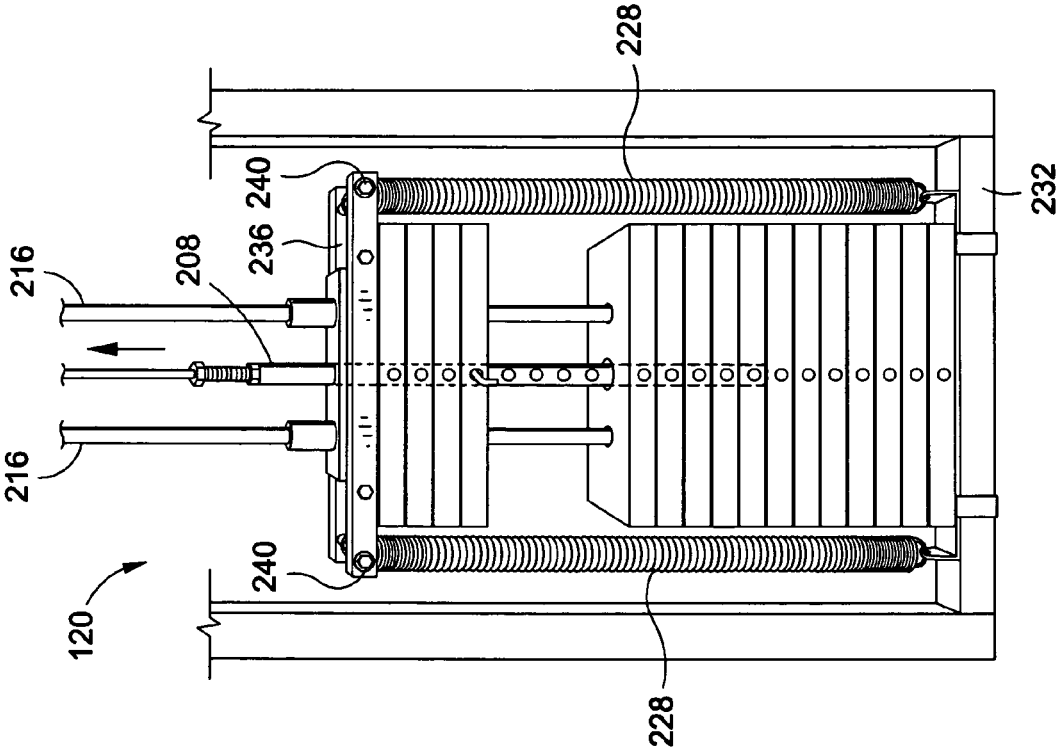
228
240
236
208
216
216
240
120
228
232

Fig. 4B

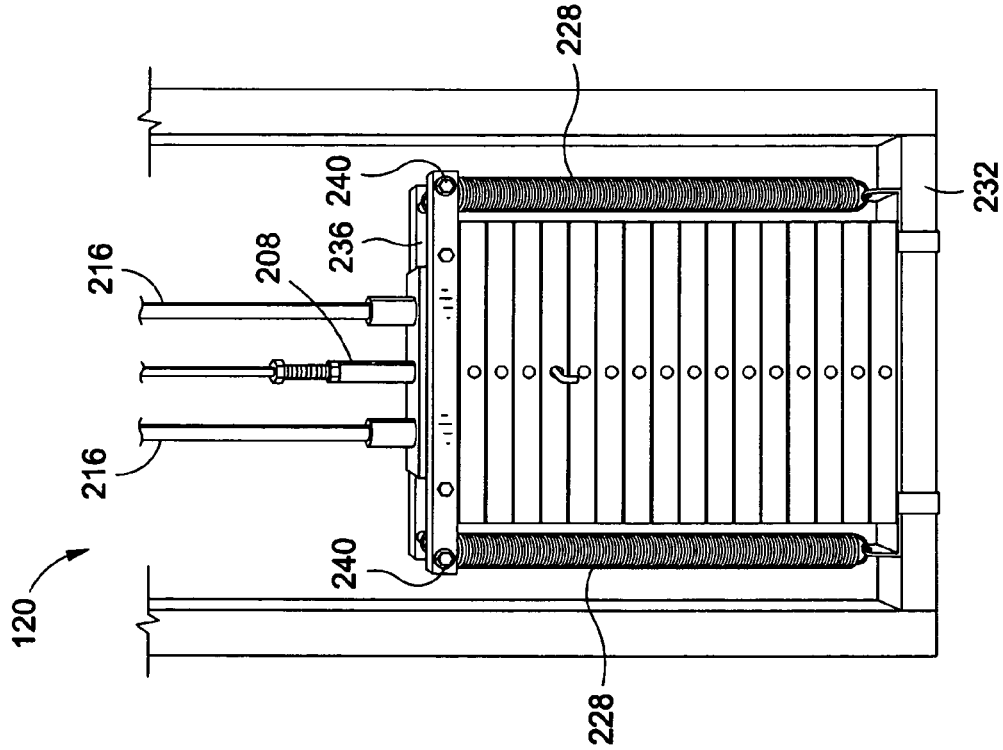
228
240
236
208
216
216
240
120
228
232

Fig. 4A

ISOLATED CURL MACHINE AND METHOD OF TRAINING THEREFOR

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. patent application Ser. No. 12/383,636, filed Mar. 25, 2009, now U.S. Pat. No. 7,959,543, the disclosure of which is hereby incorporated by reference as if set forth fully herein.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to exercise equipment and in particular to an isolated curl machine and method of training.

2. Related Art

Traditionally, bicep curls are performed by first grasping a weight or other resistance and lifting the weight by contracting the biceps. The contraction of the biceps causes the arm to bend at the elbow as the resistance is lifted. A bicep curl may be performed one arm at a time or on both arms simultaneously. Various techniques for performing bicep curls are known and commonly used such as the preacher curl and the concentration curl. These techniques rely on the lifting of a resistance to provide training to the biceps.

Traditional machines designed for bicep curl exercises, unlike free weights, may include a structure to limit the user's range of motion to that of a bicep curl. For example, traditional machines may provide a surface upon which the user may rest his or her upper arms so that the biceps are primarily used to lift a resistance. Traditionally, the hands are extended downward below the elbows when starting the exercise and then lift the resistance upward to a point higher than the elbows. In addition, some traditional machines include a rigid pivoting or rotating structure which may only be moved along an arc corresponding to the arc made by the user's arm lifting at the elbow. Though such machines may assist with proper bicep curl technique, training is not as effective as with the method and apparatus disclosed herein.

Thus, what is provided herein is a novel isolated curl machine and method of training.

SUMMARY OF THE INVENTION

An isolated curl machine for training the biceps is disclosed herein. In one embodiment, the machine comprises a frame, a seat configured to allow a user to sit thereon, an arm rest configured to support at least a portion of at least one of the user's upper arms. The seat may be secured at the front of the frame, and the arm rest may be secured above the seat and between the front and the back of the frame. The machine may include a resistance device configured to provide resistance, a cable having a first end and a second end and configured to transfer the resistance provided by the resistance device to the user, and a pulley configured to accept at least a portion of the cable to guide the first end of the cable toward the user. The resistance device may be secured at the back of the frame, and the pulley may be secured at the top of the frame or at a raised point at least above the arm rest at a raised point. The second end of the cable will generally be attached to the resistance device. A handle, which the user may grasp, may be attached to the first end of the cable.

Elements of the isolated curl machine may be configured in various ways. For example, the arm rest may be configured to support at least a portion of at least one of the user's upper arms substantially perpendicular from the user's torso. The height of the seat and the height of the arm rest may be adjustable. The resistance device may vary as well. In one embodiment, the resistance device comprises a weight stack. In another embodiment, the resistance device comprises a variable resistance device. In another embodiment, the resistance device comprises the combination of a weight stack and a variable resistance device.

In another embodiment, the isolated curl machine comprises a frame, an arm rest configured to support at least a portion of at least one of the user's upper arms, and a user engageable resistance assembly configured to provide resistance to the user whereby the force of the provided resistance is directed upward and away from the user during a bicep curl. The resistance assembly may be secured at the back of the frame. The arm rest may be secured at the front of the frame and between the top and bottom of the frame. In addition, the arm rest may be configured to support at least a portion of the user's upper arms substantially perpendicular from the user's torso.

The resistance assembly may be configured such that the force of the resistance provided by the resistance assembly is directed upward and away from the user's biceps. Also, it is contemplated that the resistance assembly may be configured such that the force of the resistance provided by the resistance assembly is directed away from the user.

In one embodiment, the resistance assembly comprises a resistance device configured to provide resistance, a handle, a cable having a first end and a second end and configured to transfer the resistance provided by the resistance device to the user, and a pulley configured to guide the first end of the cable toward the user. The cable may be attached to the handle at the first end and attached to the resistance device at the second end. In this manner, the resistance assembly may be user engageable by the user grasping the handle. The handle may be snapped into place at the end of the cable or, the distance between the handle and arm rest can be reduced by the use of a lengthener, such as a chain, to connect the handle to the cable.

A method of bicep training is also provided. In one embodiment, the method of bicep training comprises engaging an isolated curl machine. The isolated curl machine may comprise an arm rest configured to support at least a portion of at least one of the user's upper arms, a user engageable resistance assembly configured to provide resistance to the user whereby the force vector of the provided resistance is directed upward and away from the user, and a frame configured to support the arm rest and the resistance assembly.

According to the method, the user may then engage the resistance assembly by grasping a portion of the resistance assembly, and move at least one of the user's forearms from an initial position to an end position of a bicep curl to move the resistance provided by the resistance assembly. The user may then return his or her forearm(s) to the initial position of the bicep curl while engaged to the resistance assembly.

The user may engage the isolated curl machine in various ways. For example, the user may engage the isolated curl machine by placing at least a portion of at least one of the user's upper arms on the arm rest. This may occur such that the user's upper arm or arms are supported substantially perpendicular from the user's torso. In some embodiments, the isolated curl machine further comprises a seat to support the user's body. In these embodiments, the user may engage the isolated curl machine by sitting on the seat with at least one of the user's upper arms supported by the arm rest.

The resistance assembly may be configured in various ways. For example, the resistance assembly may comprise a resistance device configured to provide the resistance, a

handle, a cable having a first end and a second end and configured to transfer the resistance provided by the resistance device to the user, and a pulley configured to guide the first end of the cable downward toward the user. The cable may be attached to the handle at its first end and attached to the resistance device at its second end. In this manner, the user may engage the resistance assembly by grasping the handle. It is noted that the resistance device may comprise a weight stack, or a variable resistance generator in one or more embodiments. The resistance device may also comprise a combination of a weight stack and one or more elastic elements.

Other systems, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The components in the figures are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention. In the figures, like reference numerals designate corresponding parts throughout the different views.

FIG. **1** is a perspective view of an exemplary embodiment of the isolated curl machine.

FIG. **2**A is a perspective view of an exemplary embodiment of a resistance assembly of the isolated curl machine.

FIG. **2**B is a perspective view of another exemplary embodiment of a resistance assembly of the isolated curl machine.

FIGS. **3**A-**3**C is a cross sectional side view illustrating operation of an embodiment of the isolated curl machine.

FIGS. **4**A and **4**B are perspective views of another exemplary embodiment of a resistance assembly of the isolated curl machine.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the following description, numerous specific details are set forth in order to provide a more thorough description of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known features have not been described in detail so as not to obscure the invention.

The isolated curl machine as disclosed herein allows a resistance to be moved and bicep training to be achieved generally by a downward pulling motion. This is in contrast to an upward pulling motion adopted by the prior art. As will be discussed further below, the isolated curl machine generally provides resistance from a raised point in front of the user whereby the user pulls downward toward the user to flex the biceps. In this manner, a user may pull towards his or her body during training. This focuses training on the biceps to a degree not achievable with traditional bicep curls.

The isolated curl machine will now be described according to the figures. FIG. **1** is a perspective view of an exemplary embodiment of the machine. As shown, the machine has a front **144**, a back **148**, a top **152**, and a bottom **156** which will generally be defined by the machine's frame **104**. In addition, the machine comprises a seat **108** and an arm rest **112** as well as a resistance assembly **160**. The resistance assembly **160** may comprise a resistance device **120** attached to a user-engageable handle **132** by a cable **128**. In these embodiments, the resistance device **120** is movable by the user pulling the handle **132**. It is noted that any device capable of providing resistance to a user as described herein may be used as a resistance assembly. It will be understood that the method and apparatus disclosed herein may be used to train one or both of a user's biceps as desired.

The frame **104** may be a rigid structure configured to provide support for one or more elements of the machine. For example, various elements of the machine, which will be described further below, may be attached or otherwise secured to the frame **104**. It is contemplated that elements may be attached in any suitable way including by one or more mechanical or other fasteners, adhesives, welds, or a combination thereof. One or more of the elements may be integrally formed as part of the frame **104** in one or more embodiments as well.

It will be understood that the frame **104** may be any structure capable of supporting the elements of the isolated curl machine as discussed herein. For example, the frame **104** may comprise a plurality of elongated members such as shown in FIG. **1**. These members may be tubes or bars of various shapes. The members may have a square, rectangular, round, or "C" shaped, "I" shaped, or other shaped cross section. The members may be straight along their length or include one or more bends or curves.

The structures which make up the frame **104** need not be elongated members as shown. In some embodiments the frame **104** may comprise one or more planar or other shaped portions such as one or more plates or flat surfaces. As stated, any structure or combination of structures capable of supporting the elements of the isolated curl machine as disclosed herein may be used as a frame **104**.

The frame **104** will typically be constructed of one or more rigid materials. Metal such as steel may be used in one or more embodiments. Other materials may be used as well. For example, plastic, wood, composites, carbon fiber, alloys may be used to construct the frame **104** in some embodiments.

In one or more embodiments, the isolated curl machine comprises a seat **108** attached to the frame **104** at the front **144** of the machine. The seat **108** supports the user's body during bicep training and is positioned such that the user may engage the arm rest **112** with at least a portion of his or her arms. In one or more embodiments, the seat **108**, arm rest **112**, or both may be moved upward, downward, forward, backward, or a combination thereof so that a user may engage the arm rest **112** with at least a portion of the user's upper arms. In this manner, the user is ideally positioned to train his or her bicep muscles.

It is noted that though shown as attached to the remainder of the isolated curl machine, the seat **108** may be separate from the machine in some embodiments. Thus, in some embodiments, a seat **108** may not be required or provided as the user may use an existing seat, a chair, or similar support instead. Also, the seat **108** may not be required in embodiments where the machine is configured to be used while standing. It is noted however that an attached seat **108** provides the advantage of being stationary relative to the remainder of the machine. In this manner, exercises performed on the machine may be safer and more effective.

An arm rest **112** may be located further towards the back of the isolated curl machine relative to the seat **108** in one or more embodiments. The arm rest **112** will generally be located higher than the seat **108** so that the arm rest may support a seated user's arms. Typically, but not always, the arm rest **112** will be positioned near the upper portion of a user's torso such that the user's upper arms may be supported

substantially perpendicular to his or her torso as illustrated in FIG. **3**A. As will be described below, the arm rest **112** may be adjustable in some embodiments in order to support a user's arms in this manner.

In a standing embodiment of the isolated curl machine (e.g. an embodiment without a seat), the arm rest **112** may be located such that a user's arms may be supported substantially perpendicular to his or her torso while the user is standing. Generally, the arm rest **112** will be located higher in standing embodiments than seated embodiments, such as the seated embodiments described above. It is contemplated that the arm rest **112** may be adjustable such as by being raised or lowered or even tilted to support a user's arms substantially perpendicular to his or her torso. It is further contemplated that the arm rest **112** may be omitted and the system enabled for operation without the arm rest.

The support provided by the arm rest **112** provides the benefit of focusing training on the biceps. To illustrate, in one or more embodiments, at least a portion of the user's upper arms may be supported by the arm rest **112**. In this manner, motion is restricted to the user's forearms which are powered by the biceps. Thus, when a resistance is moved by the user's forearms such resistance is focused on the biceps.

As shown, the arm rest **112** is a padded support secured to the frame **104** and having a width sufficient to support both of a user's arms. It is noted that the arm rest **112** may be configured according to various other configurations. For example, the arm rest **112** may be padded or unpadded and may be of various widths. In one embodiment, the arm rest **112** may only be wide enough to support one arm. In addition, multiple arm rests **112** may be provided in one or more embodiments. For example, individual arm rests **112** may be provided for each arm.

It can be seen from the above description that a user may engage the isolated curl machine by sitting on the seat **108** and placing his or her upper arms, or a portion thereof, on the arm rest **112**. It is noted that the user may also engage the isolated curl machine by placing his or her upper arms, or a portion thereof, on the arm rest **112** while standing. As shown in FIG. **3**A, once in this position, the user may begin training his or her biceps by engaging a resistance assembly **160**. Generally, the resistance assembly **160** comprises the elements of the machine which are used to provide resistance to a user to train his or her biceps. With reference to FIG. **1**, a resistance assembly **160** may comprise a resistance device **120**, a handle **132**, a cable **128**, and a pulley **116** at the back **148** of the machine. In one or more embodiments, the cable **128** may be supported by a pulley **116** at the top **152** of the machine while the resistance device **120** may be supported by the frame **104** at the bottom **156** of the machine. The pulley and the handle **132** are thus located above the users elbow and arm rest **112**. One end of the cable **128** may be attached to a handle **132**, while the other end of the cable **128** may be attached to the resistance device **120**. A portion of the cable **128** between its ends may be supported by the pulley **116**. During a bicep curl, the user may grasp and pull the handle **132** downward toward the user to move the resistance device **120**. The pulley **116** translates the force to move the resistance **120** upward.

It is noted that a handle support **136** may be attached to the frame in some embodiments to hold the handle **132** when the machine is not in use. In these embodiments, the handle **132** may be removed from the handle support **136** prior to bicep training. The handle **132** may then be returned to the handle support **136** for storage after training is complete.

Generally, the pulley **116** guides the movement of at least a portion of the cable **128** as it is pulled. As shown, the pulley **116** comprises a wheel configured to accept the cable which turns about an axel; however, pulleys of other configurations may be used. The cable **128** allows the force of the resistance provided by the resistance device **120** to be transferred to a user when the user grasps and pulls the handle **132**. In one or more embodiments, the pulley **116** may be positioned (e.g. attached to the frame) such that it is in front of and above the user. As shown in FIG. **1**, the pulley **116** is attached at the top **152** and back **148** of the isolated curl machine. In this manner, the pulley **116** rotates and guides the cable **128** upward from the resistance device **120** and then down and towards the user. This is advantageous in that the force vectors of the resistance provided by the resistance device **120** are upward and away from the user thus allowing the user to pull downward to lift the resistance as the user performs a bicep curl.

In fact, user's of the isolated curl machine report that training is more effectively focused on the biceps when compared to traditional machines. In addition, those knowledgeable in the art report that the angle and location of resistance provided by the isolated curl machine provides a type of exercise which will so develop both muscles that a "split" between the two muscles of the biceps will form. It is known that such a split is very difficult to achieve through traditional bicep training methods and devices.

The various configurations of the isolated curl machine disclosed herein provide bicep training but also provide the unexpected result of training the individual muscles of the bicep. In this manner, the isolated curl machine may be used to develop the split described above. As stated, this split is not only difficult to achieve but also highly desirable especially in body building. In one or more embodiments, the location of the pulley at a raised point higher than the elbow and in front of the user provides resistance along a force vector upward and away from the user which is highly beneficial to training the individual muscles of the bicep.

The raised position of the pulley **116** is also beneficial in that it allows the isolated curl machine to accommodate users of varying heights. When positioned high on the frame **104**, the pulley **116** will likely be located above most if not all users training on the machine. Thus, short users, tall users, and those in between may enjoy enhanced bicep training on the machine because the resistance transferred to a user by the cable **128** is guided to the user from in front of and above the user, regardless of the user's height.

The raised position of the pulley **116** also allows the isolated curl machine to accommodate users having varying arm lengths. When positioned high on the frame **104**, the pulley **116** allows resistance to be provided to a user from above and in front of the user's arms during a bicep curl, regardless of the length of the user's arms.

Of course, the pulley **116** may be positioned at various locations in one or more embodiments. For example, the pulley **116** may be positioned in front of and at least above a user's shoulders to allow the resistance to be transferred to the user by the cable **128** from a raised point in front of the user. It is noted that the pulley **116** may be positioned lower however this may result in the cable **128** and thus the resistance becoming more horizontal. This generally reduces the upward force provided by the resistance and thus may reduce the effectiveness of bicep training on the machine.

Various types and configurations of resistance assemblies **160** having one or more resistance devices **120** may be provided. For example, as shown in FIG. **2**A, a weight stack may be used as a resistance device **120**. In this embodiment, the resistance device **120** may comprise one or more individual weights **204**, a lifting rod **208**, and one or more guides **216**. The lifting rod **208** allows one or more individual weights **204** to be attached thereto. For example, the lifting rod **208** may

include a series of holes **212** along its length and the weights **204** may include one or more openings **224** that may be aligned with the holes of the lifting rod. In this manner, a securing pin **220** may be inserted through an opening **224** of a weight **204** and into a hole **212** on the lifting rod **208** to secure the weight to the lifting rod. The securing pin **220** may be repositioned along the length of the lifting rod **208** to secure more or less weight to the lifting rod **208** thus adjusting the resistance provided. As shown in FIG. **2**A, a single securing pin **220** may secure a plurality of weights **204**. Of course, multiple securing pins **220** may be used if desired. The weights **204** that are not secured to the lifting rod **204** may remain stationary during bicep exercise and thus do not affect the resistance provided to the user.

The lifting rod **208** may be connected to the end of the cable **128** opposite the end of the cable where the handle **132** is attached. In this manner, pulling the handle **132** pulls the cable **128** and lifting rod **208** and the weights **204** attached thereto. One or more guides **216** may be used to guide the movement of the weights **204** as they are moved. The guides **216** may comprise rigid bars or the like which run through the one or more weights **204** of the resistance device **120**. In this manner, the weights **204** may move along the guides **216**. Guides **216** are beneficial in that they prevent the weights **204** from swinging as they move during a bicep curl. However, it is noted that some embodiments may not include guides **216** such as where movement of the weights **204** is already suitably restricted by other structures or by the configuration of the resistance device **120**. For example, planer or other shaped members which at least partially surround the weights **204**. In one embodiment, these members could be placed adjacent one or more sides of the weights **204**. In this manner, swinging or other undesired movement would be prevented by the members adjacent or partially surrounding the weights **204**. In another exemplary embodiment, the one or more weights **204** may be attached to a track to prevent undesired movement.

FIG. **2**B illustrates another embodiment of a resistance device **120**. In this embodiment, resistance is provided by one or more springs **228** rather than weights. Springs **228** provide the benefit of variable resistance which allows resistance to increase or decrease as the springs are stretched. During a bicep curl, a user's arms are generally capable of exerting more power as they move closer to the user's body. Thus, a variable resistance is beneficial because the variable resistance may correspondingly increase as the user's arms move closer to the body. In addition, a variable resistance may provide a decreased resistance when the arms are extended and more prone to injury due to their extended position. The variable resistance may then increase as the arms are moved towards the body during a bicep curl.

In the embodiment of FIG. **2**B, the resistance device **120** comprises two springs **228**, a lifting mount **236**, and a frame mount **232**. It is noted that some embodiments may utilize a single spring **228** or more than two springs. In addition, though described generally with regard to springs **228**, it is contemplated that other variable resistance generators such as elastic cords and the like may be used in addition to or instead of a spring to provide variable resistance.

The lifting mount **236** and frame mount **232** provide structures to which the ends of the springs **228** may be secured. The springs **228** may be permanently attached to these mounts by one or more welds. Alternatively, the springs **228** may be removably attached to these mounts. For example, the mounts may comprise one or more eyelets or loops which engage hooks on the springs **228**, or vice versa. Removable attachment allows the amount of resistance provided by the resistance device **120** to be changed. For example, additional springs **228** may be added or one or more springs may be replaced with stronger or weaker springs as desired. It is contemplated that any fastener, structure, adhesive, or the like that is capable of securing the springs may be used as a lifting mount **236** or frame mount **232**.

As shown in FIG. **2**B, the lifting mount **236** includes a plate-like or planar structure. This provides an area to which the cable **128** may be attached. In addition, this provides an area to accommodate two or more springs **228**. Without this area, the springs **228** may not be spaced sufficiently apart and thus become entangled. Furthermore, the planar structure may provide guide holes which allow one or more guides **216** to pass therethrough to guide the movement of the lifting mount **236** and the springs **228** as they are moved during exercise. Without the guides **216** and guide holes, the springs **228** may swing about when moved during training. It is contemplated that other structures may be used to guide the movement of the lifting mount **236** and springs **228** in one or more embodiments. For example, the lifting mount **236** may be attached to a track or be located within an open or closed vertical channel. Guides **216** and guide holes may not be required in all embodiments, as the springs **228** may be suitable stable without them.

The frame mount **232** may also include a planer structure if desired, such as for example, to provide sufficient area to allow two or more springs **228** to be used. Typically, the frame mount **232** will be attached to the frame **104** at the bottom **156** of the machine. It is noted that a planar structure may not be provided in all embodiments because one or more frame mounts **232** may be directly attached to the frame **104** at varying spaced intervals. Other resistance devices **120** may be used with the isolated curl machine as well, including but not limited to, rotating or friction based resistance devices. As is discussed above, the cable **128** and pulley **116** orient the resistance provided by a resistance device **120** so that the user experiences the force of the resistance from in front of and above the user. Thus, any resistance device **120** to which the cable **128** may be attached may be used with the machine. Also, it is noted that one or more additional pulleys **116** may be used to guide the cable **128** such that it properly attaches to a resistance device **120**. In general, proper attachment means attaching the cable **128** to a resistance device **120** such that the resistance provided by the resistance device may be efficiently transferred along the cable **128** to the user. To illustrate, in FIGS. **2**A and **2**B, a pulley **116** is used to guide the cable **128** such that a portion of the cable attaches to the top of the lifting rod **208** or lifting mount **236** respectively.

Elements of the isolated curl machine may be adjustable in one or more embodiments. For example, the seat **108** or arm rest **112** may be adjustable to accommodate various users. As stated, a user generally engages the machine by sitting on the seat **108** and placing or resting a portion of his or her upper arms on the arm rest **112**. Thus, the seat **108** may be raised or lowered to allow a user to engage the machine with a safe and proper body posture. The arm rest **112** rather than the seat **108** may also or alternatively be raised or lowered to allow the user to engage the machine. In one embodiment, the seat **108**, the arm rest **112**, or both may be raised, lowered, or both so that a seated user's arms are supported such that they are substantially perpendicular to the user's torso.

The arm rest **112** may be adjusted in other ways as well. The angle at which the arm rest **112** is positioned may be rotated such that the user's upper arms are supported at various angles as desired. Generally, the user's upper arms will be supported such that they are perpendicular to the user's torso. However, the arm rest **112** may be adjusted or tilted to support

the upper arms and different angles if desired. For example, the arm rest **112** may be tiled forward or backward to support the uppers arms at different angles. It is noted that the arm rest **112** may be tiled left or right in some embodiments such as to increase or decrease the height of one arm relative to the user's other arm.

In addition, an arm rest **112** maybe adjusted by moving the arm rest left or right on the isolated curl machine relative to the user. In this manner, the arm rest **112** may be adjusted to support the only the left arm or the right arm. Where a plurality of arm rests **112** are provided, each arm rest may be moved left or right so that the arms may be positioned closer or further apart during bicep training. This is advantageous in that users of different sizes may use the machine comfortably. Of course, as stated, a single arm rest **112** may be configured such that it is wide enough so that left or right adjustment is not required.

Operation of the isolated curl machine will now be described with regard to FIGS. **3**A-**3**C. These figures illustrate a user performing a bicep curl on the machine. A cross-sectional view of the machine is provided to better illustrate its operation. As will be described further below and as shown in these figures, the resistance provided to a user is in front of and above the user. Though described with regard to one embodiment of the machine, it will be understood that other embodiments of the machine, such as those disclosed herein, may operate in like manner. In addition, though described regarding both of a user's arms, bicep training may take place on a single arm or on both arms simultaneously on the machine.

In FIG. **3**A, a user has engaged the machine by sitting on the seat **108** and placing or resting his or her upper arms on the arm rest **112**. The user has also engaged the resistance assembly **160** by extending his or her arms and grasping a handle **132** of the assembly. As shown, the user's upper arms are supported such that they are substantially perpendicular to the user's torso. This will generally be known as the initial or starting position of a bicep curl on the machine.

It can be seen that a cable **128** is attached to the resistance device **120** on one end while attached to the handle **132** on the other end. The force of the resistance provided by the resistance device **120** is thus transferred along the cable **128**. The cable **128** is guided by a pulley **116** at the top of the machine such that the cable runs upward from the resistance device **120** and down and towards the user. Thus, as shown, the force of the resistance is upward and away from the user.

The user has adjusted the resistance device **120** to provide the desired amount of resistance. In FIG. **3**A, the user has inserted a securing pin **220** on the weight **204** of the weight stack to select the desired amount of resistance. In other embodiments, such as an embodiment having a variable resistance, the user may add, remove, or replace, one or more springs or the like to achieve the desired amount of resistance. It is noted that the amount of resistance provided by the isolated curl machine may be adjusted at any time.

In this embodiment, the user experiences little or no resistance in the initial position. As can be seen, the resistance provided by the resistance device **120** has not been moved. Of course, in some embodiments, the machine may be configured such that the user must move a resistance to get into the initial position. For example, in these embodiments, the user must grasp and pull the resistance via the handle **132** at least slightly to get into the initial position.

In FIG. **3**B, the user has pulled the handle **132** towards his or her body. This has pulled the attached cable **128** and weights **204** of the resistance assembly. Thus, the user has moved the resistance provided by the resistance device **120** by pulling the handle **132**. As can be seen, the pulling motion is accomplished by applying the strength of the user's biceps to bend the user's arms at their elbows. This is illustrated by the arrow in FIG. **3**B. The user's upper arms are supported by the arm rest **112** and thus the user's effort or strength is concentrated at the biceps when the user pulls the handle **132**. In this manner, the user raises the upper weights **204** of the resistance device **120** which have been secured to the cable **128** by a lifting bar **208** and a securing pin **220** inserted into the lifting bar. It can also be seen from FIG. **3**B that as the handle **132** is pulled, the cable **128** is guided by the pulley **116** such that the force of the resistance remains upward and away from the user.

In FIG. **3**C, the user continues to pull the handle **132** towards his or her body to an end position. The end position generally defines the end of the pulling portion of a single bicep curl. Once the handle **132** has been pulled by the user's arms to the end position the user may reduce his or her pulling force to allow the handle and his or her arms to return to the initial position.

The force of the resistance will return the handle **132** to its initial position as illustrated in FIG. **3**A. Thus, the user may continue to train his or her biceps when returning to the initial position by slowing the return of the handle **132** to its initial position. To illustrate, the user may exert a force through his or her biceps to slow the return of the handle **132**. As the handle **132** returns the attached cable **128** and weight **204** or other resistance also return to their initial positions so that another bicep curl may be performed. The force of the resistance during the return to the initial position remains upward and away from the user in this embodiment.

It is contemplated that the operation of the isolated curl machine described with regard to FIGS. **3**A-**3**C will typically occur in a continuous motion from the initial position to the end position. The user may pause or hold the end position for a time and then return, in a continuous motion, from the end position back to the initial position. The user may perform one or more bicep curl repetitions as desired or according to one or more training routines or guidelines.

As stated, the force of the resistance provided by the resistance device is guided by the isolated curl machine's pulley such that the force is pointed upward and away from the user. Thus, during a bicep curl, the user's biceps must overcome this force by applying an opposite force. Traditional bicep curls utilize a downward force which does not provide training as effective as the force provided by the isolated curl machine.

In addition, the isolated curl machine provides a generally horizontal arm support which supports the upper arms substantially perpendicular from the user's torso in one or more embodiments. This is distinct from traditional curl machines such as preacher curl machines which provide an angled support of the upper arms where the upper arms are supported such that they point downward.

As is known, each bicep has two muscles and achieving definition between these two muscles is difficult to obtain and highly desirable in the art. The unique aspects, such as the unique resistance and arm support just described, of the isolated curl machine allow the machine to provide bicep training and make the machine ideally suited to allow a user to achieve increased muscle definition of the biceps. It is specifically contemplated that the machine may be used to develop definition between the two muscles of each bicep because of the unique resistance and arm support provided by the machine as discussed herein.

FIGS. **4**A and **4**B illustrate another embodiment of a resistance device **120**. In this embodiment, variable resistance is

provided by one or more elastic elements (which in this embodiment are springs **228**), in addition to the weight stack. It is contemplated that other elastic elements such as elastic cords or bands and the like may be used in addition to or instead of a spring to provide variable resistance. Referring to FIGS. **4**A and **4**B, the top ends of springs **228** are secured to lifting mount **236**, and the bottom ends of springs **228** are secured to frame mount **232**. Lifting mount **236** and frame mount **232** provide structures to which the ends of the springs **228** may be secured. Springs **228** are attached to frame mount **232** on one end at and approximately the center of bolt **240** on lifting mount **236** on the other end. Alternate embodiments of the disclosed invention may utilize a single spring or multiple springs. Springs **228** alternatively may be permanently attached to these mounts by one or more welds, or, springs **228** may be removably attached to these mounts. For example, the mounts may comprise one or more eyelets or loops which engage hooks on the springs **228**, or vice versa. Removable attachment allows the amount of resistance provided by the resistance device **120** to be changed. For example, additional springs **228** may be added, or one or more springs (or other elastic elements) may be replaced with stronger or weaker springs (or other elastic elements), as desired. It is contemplated that any fastener, structure, adhesive, or the like that is capable of securing the springs may be used as a lifting mount **236** or frame mount **232**.

Still referring to FIGS. **4**A and **4**B, springs **228** are aligned along both narrow non-face sides of the weight stack in a central position. In operation, this arrangement minimizes the friction between the portion of the weight stack that is engaged and the guide. In addition, as the weight stack is lifted, the symmetrical location of springs **228** on the sides and approximately adjacent to the longitudinal midline of the weight stack as shown allows the weight stack to maintain relative stability and balance during movement. Further, this configuration is advantageous because, as the portion of the weight stack that is engaged is lifted, springs **228** begin to stretch or open and add intensity as and until the weight stack reaches its ultimate height. The lower intensity at the start and end of the repetition helps protect the lifter from injury in their most vulnerable position because the muscle is at its strongest when the weight stack and spring are at its maximum height, and the muscle is at its weakest when the weight stack and spring are at the starting and ending position. The combination of the weight stack and springs **228** allows the lifter to start with a manageable amount of weight to start the repetition and to increase the intensity as the forearms are curled towards the bicep. The result is a smooth and intense repetition for the lifter that optimizes the workout and, among other things, decreases the risk of injury.

While various embodiments of the invention have been described, it will be apparent to those of ordinary skill in the art upon review of the present disclosure and annexed drawings that many more embodiments and implementations are possible that are within the scope of this invention. In addition, the various features, elements, and embodiments described herein may be claimed or combined in any combination or arrangement.

What is claimed is:

1. An isolated curl machine comprising:

a frame having a front and a back;

a seat secured at the front of the frame;

an arm rest configured to support at least a portion of at least one of a user's upper arms substantially perpendicular to the user's upper torso and configured to contact the user's upper torso, the arm rest located above the seat and between the front and the back of the frame;

a resistance device configured to provide resistance, the resistance device located at the back of the frame, the resistance device including a weight stack setting upon a base, the weight stack being rectangular in cross-section with first and second face sides and first and second narrow non-face sides, the weight stack having means for adjusting the amount of resistance located on one of the first face sides, the resistance device further comprising

a lifting mount connected to the top of the weight stack;

a first elastic element and a second elastic element, the first elastic element having a top end and a bottom end, and the second elastic element having a top end and a bottom end;

wherein the first elastic element is interposed vertically along the first non-face side of the weight stack between the lifting mount and the base, and the top end of the first elastic element is connected to the lifting mount, and the bottom end of the first elastic element is connected to the base; and

wherein the second elastic element is interposed vertically along the second non-face side of the weight stack between the lifting mount and the base, and the top end of the second elastic element is connected to the lifting mount, and the bottom end of the second elastic element is connected to the base;

a cable having a first end and a second end and configured to transfer the resistance provided by the resistance device to the user, the cable attached to a handle at the first end of the cable and to the resistance device at the second end of the cable; and

a pulley configured to accept at least a portion of the cable, the pulley located higher than the arm rest to guide the first end of the cable downward toward the user;

wherein the resistance provided by the handle at the first end of the cable is directed upward and forward from the user and toward the back of the frame; and,

wherein the arm rest prevents forward movement of the user's torso against the resistance.

2. The isolated curl machine of claim **1**, wherein the pulley is located at a raised point at least 1 foot above the arm rest.

3. The isolated curl machine of claim **1**, wherein the height of the seat is adjustable.

4. The isolated curl machine of claim **1**, wherein the height of the arm rest is adjustable.

5. The isolated curl machine of claim **1** wherein the handle at the first end of the cable is attached by a chain.

6. The isolated curl machine of claim **1** wherein the handle at the first end of the cable is attached by a snap.

7. An isolated curl machine comprising:

an arm rest configured to support at least a portion of at least one of the user's upper arms, the arm rest being substantially perpendicular to the user's upper torso and configured to contact the user's upper torso;

a user engageable resistance assembly configured to provide resistance to the user whereby a force vector of the provided resistance is directed upward and forward from the user and toward the back of the frame; and

a frame configured to stabilize at least a portion of the resistance assembly;

wherein the resistance assembly comprises

a weight stack setting upon a base, the weight stack being rectangular in cross-section with first and second face sides and first and second non-face sides, the weight stack having means for adjusting the amount of resistance located on one of the face sides;

a lifting mount connected to the top of the weight stack;

a first elastic element and a second elastic element, the first elastic element having a top end and a bottom end, and the second elastic element having a top end and a bottom end;

wherein the first elastic element is interposed vertically along the first non-face side of the weight stack between the lifting mount and the base, and the top end of the first elastic element is connected to the lifting mount, and the bottom end of the first elastic element is connected to the base;

wherein the second elastic element is interposed vertically along the second non-face side of the weight stack between the lifting mount and the base, and the top end of the second elastic element is connected to the lifting mount, and the bottom end of the second elastic element is connected to the base,

and wherein the arm rest prevents forward movement of the user's torso against the resistance.

8. The isolated curl machine of claim **7**, wherein the resistance assembly comprises:

a weight stack configured to provide resistance;

a handle;

a cable having a first end and a second end and configured to transfer the resistance provided by the resistance assembly to the user, the cable attached to the handle at the first end and attached to the resistance assembly at the second end of the cable;

a pulley configured to guide the first end of the cable downward toward the user;

wherein the weight stack is user engageable by the user grasping the handle.

9. The isolated curl machine of claim **8** further comprising a handle at the first end of the cable attached by a chain.

10. The isolated curl machine of claim **8** further comprising a handle at the first end of the cable attached by a snap.

11. The isolated curl machine of claim **7**, wherein the resistance assembly is configured such that the force vector of the resistance provided by the resistance assembly is directed upward and away from the user's biceps and from the user's biceps toward the back of the frame.

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